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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,116	04/24/2001	Koh Ishizuka	35.C15325	2648

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EXAMINER

WONG, KIN C

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 11/07/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/840,116

Applicant(s)

ISHIZUKA, KOH

Examiner

K. Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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The first (given) name of the inventor does not match with the declaration. An appropriated action is required.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims (1-9, 11-12, 14-17 and 19-20) are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's Admitted Prior Art (AAPA) – Ishizuka et al (5067813).

Regarding claim 1: Ishizuka et al discloses a displacement detection apparatus (as depicted in figure 3 of Ishizuka et al) including:

a light beam illuminating system for converting a linearly polarized light beam emitted from a light emitting element into a substantially parallel light beam and irradiating a relatively moving object with the light beam through a light beam splitting optical system, the light beam splitting optical system splitting the single parallel light beam emerging from the light beam illuminating system into a plurality of polarized light beams whose polarized states are different from each other (see col. 4, line 55 to col. 6, line 2 of Ishizuka et al);

a focusing optical system for focusing the plurality of split light beams to different positions on a surface of the relatively moving object (see col. 5, line 67 to col. 6, line 2 of Ishizuka et al);

a polarizing prism for splitting reflected light beams from the relatively moving object on the basis of a difference between the plurality of directions of polarization (see col. 4, lines 55-62 of Ishizuka et al);

a plurality of light receiving optical systems for individually detecting the different polarized light beams split by said polarizing prism and outputting light receiving signals of the respective light beams (see col. 4, line 63 to col. 5, line 10 of Ishizuka et al); and

comparator for comparing light receiving signal levels of the respective light beams to detect a relative displacement of the relatively moving object (The comparator is considered inherent because Ishizuka et al describes a determining functions for the differences of the received signal levels which including the comparison function or the comparator.).

Regarding claim 2: Ishizuka et al depicts in figure 3 that wherein the light beam splitting optical system has an optical performance capable of splitting the light beam emerging from the light emitting element and, at positions where the light beams are focused by the focusing optical system, spatially separating the focusing positions of the focused light beams

Regarding claim 3: Ishizuka et al teaches that wherein the surface of the relatively moving object is substantially vertically irradiated with the plurality of focused light beams (see col. 4, line 63 to col. 5, line 31 of Ishizuka et al).

Regarding claim 4: Ishizuka et al teaches that wherein a slit-shaped marking or a three-dimensional marking is formed on the surface of the relatively moving object to generate a reflectance difference (in col. 4, lines 39-41 and col. 5, lines 42-46).

Regarding claim 5: Ishizuka et al teaches that wherein the light beam splitting optical system has an optical characteristic with which the focusing positions of the plurality of focused light beams are spatially separated at an interval almost equal to a width of the marking (in col. 5, lines 44-46).

Regarding claim 6: Ishizuka et al teaches that wherein the light beam splitting optical system has a parallel plate shape (in col. 4, lines 42-46).

Regarding claim 8: the limitations of wherein the light beam splitting optical system is a crystal optical element are considered inherent because the prism is normally comprising an optical crystal particles, thus, the light beam splitter in element 3 (prism) of Ishizuka et al is a crystal optical element.

Regarding claim 9: Ishizuka et al teaches that wherein a boundary portion is formed on the surface of the relatively moving object to generate a reflectance difference (in col. 5, lines 1-10 and col. 5, line 38 to col. 6, line 2).

Regarding claims 7 and 16-17: claims (7, and 16-17) have recitations similar to and with the same scope to those treated in the above rejections, and are met by the reference as discussed above.

Regarding claims 11, 14 and 19: claims (11, 14 and 19) have limitations similar to those treated in the above rejections, and are met by the reference as discussed above. Claims (11, 14 and 19) however also recite the following limitations of a rotary encoder, which are disclosed in col. 4, lines 34-54 of Ishizuka et al.

Regarding claims 12, 15 and 20: claims (12, 15 and 20) have limitations similar to those treated in the above rejections, and are met by the reference as discussed

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above. Claims (12, 15 and 20) however also recite the following limitations of a linear encoder that are disclosed in col. 6, lines 57-63 of Ishizuka et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims (10, 13 and 18) are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizuka et al (5067813) in view of Best et al (5909333).

Regarding claims 10, 13 and 18: the reason for Ishizuka et al is stated in above. However, Ishizuka et al is silent on the magnetic recording apparatus with the displacement detection apparatus. Best et al is relied on the combination of magnetic recording apparatus and the displacement detection apparatus (as depicted in figures 1a and 1b of Best et al – see associated descriptions for details) in col. 7, line 60 to col. 8, line 6.

It would have been obvious at the time of the invention was made to combine the displacement detection of Ishizuka et al with the recording apparatus as taught by Best et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide a precise and an accurate positioning information without mechanical coupling to the actuator as suggested in col. 4, lines 48-59 of Best et al.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takamiya et al (5774218) is cited for beam splitting optical crystal plate. Fukushi et al (6307702), Hercher (5982494), Song et al (5991112), Taniguchi (6583948) and Tsai (5774295) are cited for non-contact position (displacement) sensing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Wong whose telephone number is (703) 305-7772.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Hudspeth can be reached on (703) 308-4825. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for all communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

akw

29 Oct 03



DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600